THE ELEVATOR MOVEMENT IN THE PACIFIC NORTHWEST

The Pacific Northwest is today passing through a most interesting transition with reference to the question of the methods of shipping grain. To some it may seem a matter of small import whether the grain from Idaho, Washington, and Oregon be shipped in bulk or in sacks. But to the grain farmer of the Northwest the question is vital. Moreover, here is to be found a situation very different in nature from that prevailing in the Middle West, and, incidentally, illustrating how easily conditions alter marketing methods. Thus, in the Middle West the fight was between the line, the independent, and the farmers' elevators; in the Pacific Northwest the fight is between the elevator men and those interested in a continuance of the shipment of grain in sacks. The situation is well worth some study and attention.

HISTORY

The present method of handling grain in the three states under consideration is, like everything else, a matter of development. Twenty-five years ago attempts were made, particularly by the Northern Pacific, the Great Northern, and the Oregon-Washington railway and navigation companies, to handle bulk grain. Elevators were constructed, and a considerable proportion, if not, indeed, most of the grain, was moved from the interior railroad points to the coast—and particularly to the Portland terminal—in bulk. The roads were undoubtedly influenced by the lower cost of bulk shipments, and perhaps, too, there was some idea of forestalling an attempt at co-operative concerns.

It was not long, however, before the attempt to handle in bulk ceased, the machinery was moved, and the buildings were either torn down or converted into flat warehouses. There were several reasons for the change. One was that the farmer had grown accustomed to the use of sacks prior to railroad development: there were then no facilities for handling shipments from the interior save

by river boats, and these were not equipped for bulk handling. Moreover, the shipments were small, most of the grain being stored on the farm in sacks. Much of what wheat was actually shipped was for seed, and hence could not be handled in bulk. A final reason was that shipowners on the coast refused longer to ship grain unless it was sacked. The point is a most interesting and, in view of subsequent developments, a most important one. Most of the grain shipped abroad from Seattle, Portland, and Tacoma goes to Europe, some going to the Orient. Moreover, most of it moved in sailing vessels which ran well out into the Pacific Ocean and then cut around the Horn. The voyage was both long and rough. The vessels were—and many still are—tramp boats that had left European ports for the Orient, whence they crossed to the ports on our western coast, and then took a cargo of grain around the Horn for home. They soon found that if they were to handle grain safely it had to be sacked. Otherwise there was grave danger of the cargo shifting, and of the vessel refusing to right itself. Moreover, the trip through the tropics overheated bulk grain. So, after several disastrous experiences, the insurance companies raised their rates to a point practically prohibitive, and not infrequently refused to insure bulk grain at all. The result was that shipment of grain in bulk was generally abandoned. Even before this, as has been indicated, farmers had been using sacks to hold the grain in transit from the farm to the elevator. Though this practice was by no means universal, it was usual, with the consequence that the grain had to be cut from the sacks at the point of loading, shipped in bulk, and then resacked for embarkation. The apparent preference for the sack by a part of the farmers, combined with the insistence upon sacks for export trade, led the railroads to furnish them to the farmers. In the early nineties some of the roads actually gave the sacks away, and many of them came later to rent them at from one or two cents a sack upward. More often the farmer bought his sacks from the warehouseman, who received the grain as security for the sacks.

Later, when some of the farmers came to desire a re-establishment of the elevator system, difficulties were encountered. Many farmers, accustomed to sacking, were loath to

change. A lucrative business had grown up in the importation and sale of sacks and of twine. In some instances the railroads opposed the elevator plan, and the charge is made that the rental charge for sacks was made to vary inversely with the strength of the demand for elevators. Moreover, a "spread" had developed between the price of bulk as compared with sacked grain, the latter being from three to four cents higher. For a long time the terminal facilities for bulk grain were inadequate, especially subsequent to the burning of the Portland terminal elevator.

Within late years, however, the question has been reopened. Tacoma, Seattle, and Portland are now all equipped to handle bulk grain, and interior elevators have sprung up anew. There are several reasons for this later activity.

A feeling has been growing that bulk handling is cheaper. Moreover, only a part—and the smaller part at that—of the grain is shipped abroad, and hence general sacking is unnecessary. The railroads assert that they are willing and able to handle bulk grain. An immediate reason for the demand for the change is the price of jute sacks, which are selling at from fourteen to sixteen cents instead of seven and eight cents, as ordinarily. Added to this is the high price of sisal hemp. The question has therefore become somewhat acute, and a consideration of the arguments for and against the change will not be out of place.

ARGUMENTS OF THE SACK MEN

For purposes of this discussion, farmers may be divided into two classes—the sack men and the elevator men. Let us consider first the arguments of the sack men in favor of a continuance of the present system.

1. With reference to the price of sacks, it is pointed out that the prevailing figure is nearly twice that normally charged. It is obviously a war price, arising in part from the exceptionally heavy demand for sacks during the past year or two, and in part from the fact that jute is on the embargo list, the British government demanding large quantities for fortification purposes. Moreover, the high price of jute has been counterbalanced by the high price paid the farmers for their wheat. It is therefore unfair to base

any criticisms of sack shipments on present—and temporary—conditions.

2. Elevators have been tried in the past and largely abandoned, at heavy loss to all interested in them.

3. In the state of Washington alone, there are today somewhere between a million and a million and a half dollars invested in flat warehouses and equipment. To scrap this entire investment and substitute other equipment of at least equal value (and probably greater) would be a tremendous waste. Wooden elevators along the railroad ordinarily cost from fourteen to sixteen cents a bushel to construct, and, at prevailing prices, from seventeen to eighteen cents. Concrete elevators would cost from eighteen to twenty-two cents per bushel. This means an outlay for interior elevators at railway points of about $16,000 each for structures of 100,000 bushel capacity, which seem to be not unusual. If the farmer intends to store at these points, he will need to construct two or three such buildings at nearly every railway point. The initial investment is obvious. It appears, too, that the insurance on grain runs up to 50 per cent higher on bulk grain, possibly because of the greater difficulty of removal in case of fire.

4. Sacked grain brings from two to four cents a bushel more than bulk grain.

5. It is urged that, prior to the war at least, a large part of the export grain moved in sailing vessels that "cannot go through the Canal anyway, since to do so means entering the calms and a loss of a great deal of valuable time. Hence, the grain cannot be moved through the Canal anyway unless shipments in the future are made in steamers—a thing of which no one can be certain."

6. It is urged that the experience of the Middle West is by no means conclusive evidence of success in the section under consideration because of differences in growing conditions. In the Pacific Northwest there are raised some dozen or more varieties of wheat alone. Much of it is smutty—shrinkage averages 10 per cent, and in some cases up to 20 per cent and even more. This becomes all the more serious where grain standards vary widely in different states. Then, too, most of the wheat is of a soft variety, and bearded, with the result that it collects field dirt, and other foul

matter with great readiness. All of these things combined make bulk shipment a very different thing from what it is in the Middle West. Moreover, sacks have advantages in and of themselves, particularly in the matter of branding and separate storage. In addition to this, there is practically no machinery required for its handling.

7. The whole question is exceedingly serious for the large grain-grower—the man with 25,000 or 35,000 bushels of grain to sell. He is farming solely for a profit, and cannot afford to make a mistake. Such a grower, moreover, may easily be, as one such farmer put it, "the millstone around the other fellow's neck." He reasons in this manner: "I must be shown definitely and conclusively where the saving will come in the event that I make the proposed change. I grow six or seven varieties of wheat—Blue Stem, Red Russian, Forty Fold, No. 143, No. 146, Marquis, and perhaps others. I grow each on a soil and in a location best suited to that particular variety. Some is on very steep land—some on flat bottom land. On the latter I can use a 'combine'; on the former I am forced to use an ordinary harvester. Part of my land is leased on a three-year contract from the Indians. On such land I can ill afford to make permanent improvements in the way of storage tanks. Part of the land I am using is ten and twelve miles from a railroad. Must I keep a string of wagons over this entire route in order to keep my harvesting machines busy? I can't afford to let them stand idle, because they cost me $10 to $15 an hour whether they are running or not. It is all right for the man with 4,000 bushels, farming only his own land, close to the railroad, and with little steep land. He may make the change, with perhaps no serious loss in case of failure, but can I? Yet his experiment may fail for no other reason than because I can't afford it."

Such are the points raised by those definitely opposed to the change, or at least not as yet convinced of its wisdom. Let us turn now to the arguments of the advocates of bulk shipments.

ARGUMENTS OF THE ELEVATOR MEN

1. To begin with, it may be noted that not over 25 per cent of the grain of the three states in question is shipped abroad as grain.

Possibly 25 per cent more is shipped as flour. The rest is consumed at home as flour, utilized as seed, or shipped east by rail. Hence, as the situation is now, the entire supply of grain must be sacked in order that the 25 per cent may be shipped in the export trade. If this latter portion must be sacked before shipment—which, as we shall see, is not clear—it would seem but fair that the burden should rest upon only the grain that is actually shipped thus, and should not saddle the entire Pacific Northwest with a questionable system of grain shipment merely because of the requirements of a small portion.

2. A basic argument rests upon the possibility of avoiding the long voyage around Cape Horn. Since the bulk of the exported grain is, for the present at least, moving in steamers, and since there is some assurance that the Panama Canal is permanently open, there seems to be little reason for still clinging to sack shipments. Grain can move from Seattle, Portland, or Tacoma in bulk just as well as it can from Galveston. In short, the situation which at one time forced sack shipment would seem to be a thing of the past.

3. It is argued that the handling of grain in bulk is cheaper than the handling in sacks. Thus, the following statement of relative costs was prepared by a special committee at a conference of grain-growers and handlers of grain held in Spokane on May 6, 1916:

COMPARATIVE COST OF HANDLING GRAIN FROM FIELD TO MARKET IN SACKS AND BY BULK

Sacked Wheat	Cents per Bushel	Bulk Wheat	Cents per Bushel
Threshing for sacks	7.8	Threshing	6.8
Sacks at 8 cents	3.5	Hauling	2.5
Hauling	2.5	Handling in local warehouse	1.
Handling in local warehouse	1.5	Freight	10.2
Freight	10.2	Handling in terminal warehouse	1.
Handling in terminal warehouse	1.25		
	26.75		21.5

Total cost sacked wheat	26.75 cents per bushel
Total cost bulk wheat	21.50
Saving by bulk wheat	5.25
Less return sack	3.
Net saving	2.25 cents per bushel

Certain of the items in this statement call for explanation. It will be noted that "threshing for sacks" is placed at 1 cent a bushel above bulk cost. This is the estimated cost per bushel of the employment of two sack-sewers and a sack-jigger—wages and board. "Hauling" is placed at the same figure in each case. In all probability, the cost for bulk handling would be less. The time required for the handling of the sacks and the time lost incidental to waiting one's turn at the warehouse might easily mean that on a haul of five or six miles, three trips might be made with bulk grain where but two would be possible with sacks. The higher cost of sacked grain at the local warehouse is due, of course, to labor expense. The three cents allowed for "return sack" is a most liberal allowance. In nine cases out of ten the sacks are never returned at all, being used to ship bran or shorts in, left to rot, or sold to the sack manufacturers. In any of these cases, the sack is a gift from the farmer to the owner of the terminal elevator, as no payment is ever made for them. Even if returned, the sack has lost anywhere from 60 to 85 per cent in value, and is often not worth using. The freight is also placed at the same figure. It must be remembered, however, that with sack shipments, freight must be paid on the sacks, averaging, perhaps, three-fourths of a pound each in weight.

Under present circumstances the difference thus indicated is counterbalanced in part, but only in part, by the "spread" in price. This "spread," however, is likely to be most delusive. For one thing, it is not always present. In the next place, the price of wheat is based on the Liverpool price, which is computed on bulk grain and not on sacked grain. The price to the farmer is the Liverpool bulk price, less exchange, freight, and other usual charges, plus a premium for the sack. This premium, however, as has been indicated, is more than counterbalanced by the loss at other points.

4. Another very important factor is the element of time. This is true from whatever angle the problem is viewed. Thus, some years ago, farmers were at times required to accept from five to seven cents a bushel less on wheat because the sacked grain could not be handled with sufficient speed at terminal points to insure the

time of delivery. Again, the demurrage may be heavy. The ordinary time of car detention for unloading is two days; a car of sacked grain may stand for five or six. The same difficulty confronts the shipowner. A captain of a vessel loading wheat put it in this way: "I always hate to come to a port in the Pacific Northwest for grain. I have been here two weeks putting in this cargo of seven thousand tons. At such points as Galveston, where grain is handled in bulk, twelve to fifteen hours is ample." With ocean rates at their present figure, the loss is simply enormous.

5. What makes the present method seem even more uneconomical is that rarely is the exported grain shipped in the identical sacks in which it is received. The sacks, upon arrival at the terminal elevators, are cut open, the grain cleaned and then resacked for its ocean voyage. The old sacks are not returned, and the new sacks are left to the importer to dispose of as he sees fit. To say nothing of the loss of time occasioned by this double operation, the additional sack loss is considerable.

6. An argument is also made for bulking grain on the ground of health. One farmer urges it in this form: "I hate the sack for the same reason that you should hate it. The reason is that I have seen too many young men of sixteen years of age or older lifting sacks of wheat that weigh as much as they do, and we have too many young men with broken backs. They get tired of this sort of thing and leave the farm, and then we wonder why they do. They are broken down when they leave."

7. Lastly, it is urged that there is no sound reason for scrapping the present investment since the flat warehouse can be converted into one capable of handling bulk grain at an expenditure by no means excessive, and the equipment needed by the farmer is not expensive. Wagon tanks can be purchased, with a hundred-bushel capacity, for from $45 to $60. These hold as much as a man could haul profitably with a four-horse team were he using sacks. Or an ordinary wagon could be equipped with a home-made "California crib," to hold the grain, a hole cut in the wagon box, and a spout with a cut-off attached. If the grain is to be stored on the farm, steel tanks of a thousand-bushel capacity can be purchased, even at present prices, for $135 to $150 and

homemade ones can be made of wood for even less. A tank, with a capacity of 16,000 bushels, including the elevating machinery, may be purchased for $1,500. It is probable that the total cost for handling three to four thousand bushels (a fair average in the Inland Empire) could be saved by bulk handling within a few years, and a permanent improvement would exist besides.

So far as the warehouses are concerned, a scales can be secured at a reasonable price; a 10-horse-power gasoline engine can be had for about $350 (or, if the grain is not to be cleaned at the interior house, a 4-horse power engine at $130 will do) and a conveyor can be installed for not over $200. By the use of such equipment, a load of one hundred bushels can be unloaded, weighed, cleaned, and stored inside of three minutes, with the labor of one man.[1]

CONCLUSIONS

The conclusions based on these arguments must necessarily be qualified in character. It seems beyond question that for a considerable period of time some grain will have to be sacked, whatever the ultimate outcome. Many farmers are not equipped for the handling of bulk grain, even if they wanted to handle it, and cannot be equipped at once, if deliveries of elevator equipment are not made with greater promptness than has attended some deliveries in the past. More important still, many farmers are by no means

[1] The following is an excerpt from a report of a committee appointed by the Spokane Chamber of Commerce to investigate methods of handling bulk grain:

"Demonstrations of the air-pressure grain conveyor at Garfield on June 27, with the equipment designed for the Lawrence-Whisler system for handling bulk grain, proved beyond a doubt that it is possible to handle this year's crop in bulk through the existing flat warehouses.

"The blower moved grain to and from the bins, a distance of at least 75 feet, to the full satisfaction of all who witnessed the trials. At the same time, the grade of the grain was actually raised as a result of the air pressure in the conveyor removing a large percentage of smut and other foreign matter. Moving the grain through the conveyor, in a great measure, takes the place of an expensive grain separator.

"All that is necessary to convert a sack warehouse to bulk is to divide it into bins and instal the following equipment: a pneumatic air conveyor, capacity 1,000 bushels per hour; gasoline engine or motor, 15 H.P.; wagon dump scales; distributing head; automatic scales to weigh the grain as it goes into a car, and the chutes to and from the bins. We have been informed that the full equipment, except to build the bins, can be purchased and installed for less than $1,500."

convinced that bulk shipments would save them anything in the long run. The increased amount of grain shipped east by rail (where, of course, bulk grain is in marked preference) does not indicate that it will continue to increase after the present war. In fact, it is altogether probable that the bulk of the wheat of the Pacific Northwest will continue to be consumed locally or shipped by water.

It should be noted, too, that the jute situation is abnormal; and even if it were not, no conclusion could be drawn from the fact. The average price is perhaps eight or nine cents, with no substitute as yet on the market. Yet experiments at the Washington State Penitentiary and elsewhere go far to prove the feasibility of making a fiber out of "Jim Hill" mustard, oat and wheat straw, and Sudan grass, either when alone or mixed with jute. The only obstacle, seemingly, in the way of a general use of this substitute is the lack of machinery with which to manufacture the fiber. And, of course, little will be forthcoming if the bulk movement continues to grow.

The greatest obstacles, in many ways, to bulk shipments in the section under consideration are the great number of varieties of wheat, the prevalence of smut, the different conditions of land tenure, and the difference in grain standards. A uniform grading law would of course remove much of the difficulty on that score. The smut question is more serious, because harder to remove, but the evil doubtless will eventually be at least materially reduced. The variety of grain is not so serious as may appear. Farmers must come to realize that too many varieties are grown. While varying conditions of soil, elevation, and the like will always mean a considerable diversity in this respect, a choice of not over a half-dozen varieties should serve.

It is well to bear in mind, in discussing these various objections, that a great deal of grain, absolutely considered, is now being bulked in the three states under consideration. What is more, bulk shipments are unquestionably growing in favor, and an increasing amount of grain will be handled in this manner. Figures seem to indicate that particularly after one-half or two-thirds of the grain moves in bulk the cost of marketing will be materially less. The extent to which the Panama Canal has changed the situation is

not clear. It may well be that after the war the use of sailing vessels for the transportation of grain will not be common. If not, then at least one serious obstacle will be removed. Perhaps the situation may be met in any event by the use of a sail-and-power ship, or by the use of tugs through the region of calms. In either event, however, special ships must be constructed for use in the grain trade. Unfortunately, some ships built for the bulk grain trade were found, under conditions then existing, to be unprofitable, and had to be rebuilt in part. So far as the railroad and terminal men are concerned, there seems to be no opposition to the elevator movement. "Ship us the grain, and we'll handle it any way that comes" seems to be the sentiment.

The question where the grain should be stored awaiting sale need not concern us here. Suffice it to say, it should be kept either on the farm, or sold at once and shipped to the terminal elevator, the farmer hedging this sale by the purchase of a future option, if he is not satisfied with the prevailing price. It cannot, as has so largely been done heretofore, be stored profitably at the interior railway points. Neither need the "spread" in price prove serious, for the difference now existing should entirely disappear once the majority of the farmers change from sack to bulk handling.

HOWARD T. LEWIS

UNIVERSITY OF IDAHO